

**RPS Working Group  
Meeting Minutes  
April 5, 2005**

**Panel One**

1) Peter Dreyfuss, U.S. Department of Energy

- i) The Department of Energy ("DOE") houses a research arm for energy efficiency and renewable energy throughout the nation.
- ii) The DOE takes no position on state legislation or policy.
- iii) Material can be provided about programs at the DOE. These programs include wind technology, photo voltaics, biomass and other renewable sources of energy.
- iv) The DOE can offer assistance in implementing the renewable portfolio standard.

2) Dan LeFevers, Gas Technology Institute ("GTI")

- i) Currently, there are 50-100 MW municipal wastewater facilities in Illinois.
- ii) GTI is available to assist Illinois with technical questions related to biomass.
- iii) Gasification is difficult in Illinois due to a lack of feedstock like woodchips. Other things to consider are crop issues, collection issues, and economic issues for farmer, etc.
- iv) Illinois presents a good opportunity with the large number of swine farms in the southern part of the state.
- v) California has 30 bio plants that use more traditional methods instead of gasification.
- vi) Illinois could employ incentives and outreach programs to make biomass more attractive option.

b) Questions-

- i) What energy can you get from 50 MW (kWh)?  
(1) Mr. LeFevers will research the answer and report back.

c) How is smaller scale generation used?

- i) The amount of energy generated is not really large enough to affect the grid, but that would be up to the utility. Some farms in Wisconsin do put their power into the grid.
- ii) Larger farms could produce up to 3-5 MW.
- iii) Peter Dreyfuss response: Research is being conducted in Iowa using switch grass to combine with coal. Anaerobic digesters for waste are commercially available. Grants are available for projects. The cost- benefit must be measured in respect to waste; total benefits must be measured.
- iv) It may be more beneficial to clean and put directly in pipeline.

3) Bill Johnson, Alliant Energy

- a) Mr. Johnson used a power point presentation. This will represent the minutes for his presentation.
- b) Mr. Johnson also presented extra handouts.
- c) Alliant has a tariff that allows a premium price energy for biogas.
- d) Alliant works with consultants to install digesters on farms.

- e) It takes five animal units to produce one kW.
- f) The farmers have several options with biomass facilities. They can net meter electricity, sell to the grid or use on their own farm.
- g) Questions
  - i) How does the six (6) cent credit work?
    - (1) The six cents is not a credit but a purchase price. This encourages maintenance in the off peak. It is incorporated in the tariff to create an economic incentive. The Wisconsin Public Service Commission allows this to flow through the Fuel Adjustment Clause even though it is above market price.
  - ii) Does the five year contract pay back time service the debt?
    - (1) Cost recovery does not occur in the five year period. Longer contracts are not allowed. Alliant intends to ask for extension this year.
    - (2) The responsibility is to pay a fair price. Customers should not expect a fast pay back with these projects. In the upper Midwest we should foster saturation zones (high phosphorus).- We need to consider the total benefits
  - iii) What is the cost per kW?
    - (1) Each animal costs \$1000. The energy cost is in the \$3500-\$5000 range.
  - iv) Can biomass be considered base load?
    - (1) Biomass can account for up to 89% of capacity.
  - v) Is there a capacity payment?
    - (1) No. Everything is included in the tariff.
- 4) Freddie Greenberg, Illinois Landfill Gas Coalition
  - a) Ms. Greenberg used a power point presentation. This will represent the minutes for her presentation.
  - b) Questions
    - i) How does the Retail rate law work?
      - (1) It is a program that provides a loan during financing period of the project. Incentives have created enough interest and economic development. Illinois produces the second largest amount of landfill gas, second to California. In California, the avoided cost was ten (10) to twelve (12) cents per KWh. In Illinois, the avoided cost varies between 1.8 to 3.6 cents per kWh. This would not be possible without the retail rate law.
    - ii) What are the interconnection requirements? Is curtailment required? Is landfill gas saved for peak shaving?
      - (1) Landfill gas cannot be stored. It is drawn to central point at the facility. If it is not used, it is burned in a flare. Gas is produced at stable levels.
      - (2) Ms. Greenberg is not aware of curtailment issues that affect landfill gas facilities. The cost of a facility depends on how close it is located to distribution facilities. The cost can range from \$100,000 to \$500,000. The cost depends more on infrastructure. These projects rarely affect transmission.
      - (3) The estimated capital cost for a landfill gas project is \$1200 per kW.

- (4) The average lifetime of a facility depends on the number of cells. These projects are developed in cells. Once one cell filled, the next cell is used. Many of these facilities may last 25-30 years.
- iii) Is there a tariff in Illinois?
  - (1) The output is sold at avoided cost. The loan payment is a separate tariff, per the Retail rate law. The finance period is usually 10 years.
- iv) How many are or may be built per year? Ms. Greenberg is unsure. To extent there are incentives; projects may be developed as fast as possible.
- 5) Mark Hall, Primary Energy
  - a) Mr. Hall used a power point presentation. This will serve as the minutes for his presentation.
  - b) Questions
    - i) Could these projects be used energy efficiency measures? Do these projects use green certifications?
      - (1) Nevada provides green tags for recycled energy. Pennsylvania uses a different term, industrial fuel and heat byproducts, but the same green tag concept. Legislation in Texas would expand the Renewable Portfolio Standard to include recycled energy. Green certification is also under consideration in other venues.
      - (2) Recycled energy falls into Demand Response/Energy Efficiency umbrella as well. Although, it has the same environmental attributes as those projects included in Renewable Portfolio Standard, then it meets the definition of renewable resource. Recycled energy may levelize the cost of a Renewable Portfolio Standard. It is difficult to give the installed cost, as it varies for each project. The typical payback is two years.
- 6) Mark Burger, Spiresolar
  - a) Mr. Burger used a power point presentation. This will represent the minutes of his presentation.
  - b) To be viable, solar energy needs access to a power pool. It needs the ability to trade across PJM/MISO.
  - c) Question
    - i) What is the capacity of a local plant? How many employees?
      - (1) There were twenty (20) people, producing hundreds of kW per year. Now there are 10 people. Every Mw employs about thirty-five (35) people.

## Panel 2

- 7) Wind
  - a) Dennis Elliott, National Renewable Energy Laboratory
    - i) Mr. Elliott used a power point presentation. This will represent the minutes for his presentation.
    - ii) Questions
      - (1) Did this study consider transmission capability in relation to areas where wind power could feasibly be developed?
        - (a) Not in this study. Other studies took this into consideration.
      - (2) What is the estimated cost of wind per KW?

- (a) Others have conducted those studies. This study covers only the availability of wind.
  - (b) The DOE funds wind maps for guidance, not for economic analysis.
- (3) How much Class 4 wind is available in Illinois?
  - (a) Approximately 3000 MW.
- (4) What is the capacity factor difference between Class 3+ and Class 4 wind?
  - (a) This is an arbitrary classification. There is not much difference in capacity. The current study is based on 2001 data. Today, wind potential may be a lot different given advances in technology.
- (5) There are loan programs available to gather wind data. There is a program in Illinois, coordinated by Western Illinois University (details?). Many of these programs loan funds for anemometers. Most investors in wind technology get their own anemometers. Because of this, there is often a loss quality control of the data. There is a need for organized programs of wind data gathering instead of general public involvement.
- (6) How often are the maps reviewed?
  - (a) It depends on the demand for wind power. It also depends on the multi- year program plan. The wind power in America plan is more strategic. If a state isn't investing in wind, then NREL won't update the map.
- b) Environmental Law and Policy Center ("ELPC") panel
  - i) Roby Roberts
    - (1) Mr. Roberts used a power point presentation. This will represent the minutes of the ELPC panel presentation.
    - (2) Additional information
      - (a) This year 2000 MW of wind capacity will be installed in the United States and 400-500 MW will be installed in Canada.
      - (b) The number of projects in the transmission queue demonstrates a maturing market in IL.
      - (c) There are about 2000 MW in the queue for Illinois.
      - (d) Economic issues
        - (i) There was an article published recently regarding LaSalle County's proposal to tax wind turbines on a per square foot basis.
      - (e) Turbine availability
        - (i) Siemens and an Indian company are getting into turbine manufacturing.
      - (f) Wind developers work the Edison Electric Institute to draft power purchase agreements.
      - (g) Environmental assessments
        - (i) California has avian issues. What mitigation measures are used to reduce negative impacts to avian populations?
          - 1. For now, reconstruction surveys and post construction surveys are conducted.
          - 2. It is useful to compare environmental impact of wind power to other technologies.

3. The American Wind Energy Association (“AWEA”) conducts siting seminars. This is getting the message out there that minimum criteria should be considered when siting projects.

(3) Questions

- (a) Under the terms of the Power Purchase Agreement, does the purchaser bear the energy price risk? How does the price escalator work?
  - (i) With the escalator, the customer pays less up front for the wind, based on an index, usually the Consumers Price Index.
  - (ii) Customers pay for all delivered energy. There is risk associated with outages and congestion issues.
  - (iii) Developers tend to be flexible about pricing. They have knowledge about the best time for wind delivery. An example of flexible pricing terms would be to set a higher price in August than April, depending on the better delivery times.
  - (iv) In a contract to get a certain dollar figure per mWh, if the market price is worth more than the contract price, the purchaser gets benefit. Conversely, if the market price is worth less than the contract price, the purchaser bears the risk.
- (b) Is it necessary to perform a federal Environmental Impact Statement (“EIS”)?
  - (i) In Illinois, the permitting of power plants is county based. These wind projects do not fall under federal programs for transmission siting that would trigger an EIS.
  - (ii) The United States Fish and Wildlife Service conducts surveys of the environmental impact of a proposed project. The developers will share these surveys up front.
  - (iii) Wind projects are not excluded from federal review; there is no federal regulation for power plant.
  - (iv) There are state agencies in some states that would review a wind project prior to construction.
  - (v) If there were federal funds involved, then an EIS would be conducted.
- (c) What is the availability to meet the 2006 wind requirements outlined in the Governor’s proposal? Can the 2% RPS be met?
  - (i) The developers need until December 31, 2006 to meet the 2%. The capacity can be installed by then.
- (d) How are the energy imbalance and scheduling issues addressed?
  - (i) At the Federal level, the Federal Energy Regulatory Commission monitors these issues. The PJM rules are friendly about these issues.
  - (ii) Technical studies have been conducted by the New York ISO and Minnesota.
    1. There are large penetrations of wind compared to a few years ago.
    2. Wind can be reliably integrated into the grid.

3. Projects are being built in shorter time frames with relatively minimal impacts. There are impacts to the day-ahead time frames.
  4. The costs are moderate; roughly \$2-\$4 mWh.
  5. The Minnesota study found that wind forecasting technologies are good and improving.
- (e) Does it cost more or less to develop in Illinois?
- (i) New York is very expensive. Oklahoma is relatively inexpensive. Illinois is in between, more like Texas.
  - (ii) Illinois is higher waste state, which makes wind projects more complicated from land perspective. In Texas, there is a lot more empty land.
  - (iii) Turbines make up 75-80% of the cost of a project.
  - (iv) In Illinois, it costs roughly \$1400 per KW.
- (f) Is there a State policy for projects decided at the county level?
- (i) Sometimes the collective body needs to enforce will, for example, with transmission siting authority.
  - (ii) There is too much intervention in some states.
  - (iii) Illinois has the appropriate balance.
- (g) What happens if Production Tax Credit ("PTC") is eliminated?
- (i) It depends on the terms of the PPA.
  - (ii) Is there a provision for liquidated damages?
    1. It depends on the PPA.
- (h) How much installed capacity is in Illinois right now?
- (i) What class of wind is necessary to make wind profitable?
- (i) It depends on the market, transmission availability, the quality of wind, the height of the tower, the swept area, etc.
  - (ii) In the Columbia River Gorge, technology changes allow for projects in lower class sites.
  - (iii) The wind around Mendota Hills is rated at least Class 3+, possibly even Class 4.
- (j) Are the projects in queue discussed today just for Illinois?
- (i) Yes.
- (k) If there were a bid or RFP process to meet the goal for wind, how many developers would participate?
- (i) Approximately ten (10) to twenty (20) developers would likely participate.
- (l) How is the penalty for failure to meet the RPS standard viewed? Is it considered a cost of compliance? How often is mechanism used?
- (i) In Massachusetts, Connecticut and the New England Power Pool, the prices for Renewable Energy Credits are close to the penalty, this constrains supply.
- (m) Is Green pricing a complement to an RPS?
- (i) The wind developers find green pricing to be great for public relations purposes.

- (ii) A study was conducted in Texas, which determined that wind power is very popular.
  - (iii) Nationally, there is a 3% subscriber rate to green pricing.
- (4) How does forecasting work?
  - (a) Forecasting focuses on the day-ahead and hourly markets.
  - (b) The hourly pricing is very reliable.
  - (c) The twenty-four (24) hour forecast is accurate in terms of total energy, although the exact hour is not as accurate.
  - (d) The focus is on the consequences of hour- ahead for load following.
- 8) Brent Gale, MidAmerican Energy
  - a) Mr. Gale did not use a power point presentation during his remarks. He referenced a previously submitted presentation that will serve as the minutes for his presentation.
  - b) Information
    - i) 2006 is ambitious in terms of meeting the actual production goals as outlined in the Governor's letter. A more realistic goal is to have contracts signed.
    - ii) It may be beneficial to set goals for meeting the Sustainable Energy Plan, remove barriers to entry and let the market work. Iowa achieved success under this approach.
    - iii) For a wind farm, in terms of MW to acres, at least 40 acres per turbine are needed. 100 acres per turbine would be better. The turbines need unobstructed access to wind to operate efficiently.
    - iv) When developing these projects, one must consider that not every farmer/land owner will participate.
    - v) It is more expensive to build projects in Class 3 or 3+ wind areas than Class 4 wind areas. Taller towers with longer rotors are needed to achieve comparable capacity factors.
    - vi) MidAmerican's cost is based on a 50/50 capital structure.
    - vii) Capacity factor and capital expenditures are the biggest drivers of cost of a project.
    - viii) The PTC is critical for wind development.
    - ix) A national REC trading program is a good idea.
    - x) Will the PTC be extended?
      - (1) This may not be known until October. It is possible that the credit could be at a different level.
      - (2) Roby Roberts thinks the fate of the PTC will be known before August recess of Congress.
    - xi) There is a need for clarity in the Illinois Commerce Commission's rules.
    - xii) Turbine prices fall victim to boom and bust cycles. If these could be eliminated, turbine prices would likely soften.
    - xiii) Operation and Maintenance costs \$25,000 per turbine per year.
    - xiv) MidAmerican works with wind developers to get projects developed.
 

There are many good developers in Illinois. Sometimes the developers assume the construction risk. Construction of the projects is by a general contractor.
    - xv) The length of construction time of a project varies. Thirty-five (35) turbines per month can be built in the summer, depending on tower availability. With smaller turbines, more can be built per month.

October, November, and December are high wind months. Towers cannot be built in high wind.

xvi) Transmission costs are site specific. It takes approximately one year to get a project through PJM's queue. If you need to build substation, this is another thing to keep in mind. Substations take approximately one year to build.

xvii) The ICC should look at each utility's portfolio to determine how beneficial wind is to that utility.

c) Questions

i) How was MidAmerican's wind program started?

(1) There is no RPS requirement in Iowa. Iowa's Governor asked for 1000 MW of wind power by 2010. Then he asked MidAmerican how it would go about meeting this target. MidAmerican presented a proposal. Iowa eliminated some regulatory barriers such as the least cost requirement and allowed advance ratemaking.

(2) Before this, MidAmerican litigated a mandatory RPS in Iowa for 15 years.

(3) MidAmerican does not support state RPS requirements because there are too many boundaries. MidAmerican advocates for a nationwide REC market.

ii) What has happened over the last 15 years to make wind a viable option?

(1) There have been gains in technology, increases in capacity factor and better information. This all makes wind a better proposition.

(2) Class 3+ wind areas will likely require more costs to develop than MidAmerican is comfortable with.

iii) Should there be a State renewable policy?

(1) Where it makes economic sense, yes.